

THE ZOOLOGIST

No. 850.—April 15th, 1912.

ORNITHOLOGICAL REPORT FOR NORFOLK (1911).

By J. H. GURNEY, F.Z.S.

It hardly seems like twelve months since I wrote the last Ornithological Report for Norfolk, but nevertheless the time has come round to draw up another, and I had better begin with—

The Vernal Migration.—The spring migration must have commenced early—at any rate, the Rev. M. C. Bird, to whose notes I am always so much indebted, informs me, though not on his own authority, that the Chiffchaff was heard near Norwich on Feb. 12th, and the Wryneck on March 13th. After this came a spell of cold weather, so that on April 6th it was no surprise to see deep snow on the ground. Writing from Lowestoft on that day, Mr. C. B. Ticehurst alludes to the desultory way in which bird migration was proceeding, such weather probably acting as a check upon it.

The Crossbills had perhaps already departed; I know of none being seen near the sea during March and April, but emigration is so difficult of observation compared with immigration. The travelling birds seldom leave our Norfolk shores before nightfall, and then it is impossible to see them depart, and their exit can only be guessed at by their absence afterwards, which may or may not be immediately remarked. From May 15th to July 26th small parties of Crossbills were probably moving along the coast, as between those dates they were seen by W. Burdett at Northrepps, the greatest number viewed by him being twenty-six on July 20th, very early in the morning. On June 19th I saw four flying rather high, and making straight for the sea, half a mile distant, calling as they flew over the tops

of the trees. A good many must have bred again in the Thetford and Brandon district, for eight nests were found in less than half a square mile by Mr. B. B. Riviere, and on April 15th Mr. W. A. Clarke saw a nest at Foulmere.

The Breeding Season.—The summer of 1911 was terrible, being the hottest and most rainless summer experienced in the counties of Norfolk and Suffolk since 1868 (see Weather Report, by A. W. Preston, F.R. Met. Soc.). In many places fields of barley took fire by the sparks emitted from adjacent lines of railway. July 31st was supposed to have been the hottest July day for fifty-two years, and on Aug. 9th my thermometer stood at 96° in the shade. Young Partridges did not suffer nearly so much as many people, who are unaware how little moisture these birds require, expected, and contrary to anticipation it proved an extraordinarily good year for wild Pheasants.

The great event of 1911 was the breeding of the Bittern, possibly due to the drying up of some of the Dutch swamps by the great heat. Miss Turner has already published an admirable account of the way in which she found the young one (cf. 'British Birds' and 'Country Life' (Dec. 2nd, 1911)), but I can add a few particulars to this record. The last nidification of a Bittern in Norfolk, if not in England, was in 1886, when a young one was obtained. Although nearly full-grown, there was no doubt about its being home-bred, for there was still down upon it when I examined it at the shop of the late Mr. Cole.

It is equally satisfactory to have established, on the excellent authority of Mr. N. Tracey, the nesting of the Common Curlew in the vicinity of King's Lynn. Readers may perhaps remember that the nidification of this species was provisionally announced so long as twenty-three years ago (Zool. 1889, p. 336).

Another species which I think calls for some remark is the Little Owl, for it seems to be resolutely spreading, and to be making its way into Norfolk and Suffolk. In 1910 seven were recorded as mercilessly destroyed by keepers, and during 1911 seven or eight more can be added to that list. Mr. Tracey has every reason to believe that a pair bred near Lynn.

The Autumnal Migration.—The first part of the autumn migration was very slack; only a single Bluethroat was seen, and one good observer, who often comes to Norfolk, and who

stayed on a smack in a harbour well situated for making observations, says that from Sept. 10th to the 30th he never saw fewer migratory birds on the Norfolk coast. The fact was, the weather was too fine. What bring us oversea migrants, and among them rarities from Russia, and even from Asia, are mist, rain, and strong head-winds. The birds travel by night, and unless we have these unsettled conditions of weather they pass over Norfolk and its shores without alighting. Birds probably travel at an immense height, and if all goes favourably the phenomena of migration do not come under human ken at all; millions may pass our shores in a single night without anyone being the wiser, or suspecting their presence. However, on the night of Sept. 12th Mr. F. Penrose recorded a movement of small dimensions, which included an Icterine Warbler ('British Birds,' v. p. 188), and there was another rush on Sept. 30th, and again on Oct. 5th. During October a nephew of Mr. Arthur Patterson, who is stationed on the "Leman and Ower" light-vessel, sent his uncle some interesting memoranda on birds, in which he reported visitations from six Kestrels, a Barn-Owl, a Short-eared Owl, a Water-Rail, a Jackdaw, a Brambling, a Greenfinch, and a few Starlings. Subsequently he furnished Mr. Patterson with several more observations:—Nov. 28th, a Starling or two; 29th, about thirty Snow-Buntings, one Lark, one Yellow Bunting, two Tree-Sparrows, and three Starlings; 30th, Grey Linnet, Greenfinch, Thrush, and several Chaffinches; Dec. 4th, about 2 p.m., a flock of about twenty Yellow Buntings came on board, and a flock of Crows passed over, high up. Mr. Paston, however, finds that since the lights were made to revolve on the "Leman and Ower" Sky-Larks have been less attracted. Birds of prey were by no means numerous, nor are they likely to be so when Government rewards are offered for their destruction in Norway.* Three Rough legged Buzzards, a Peregrine Falcon, a Marsh-Harrier, and two Merlins

* Probably a portion of those which we used to get in Norfolk came from the province of Trondhjem, where premiums have been paid in twelve months on one hundred and eight Eagles, besides other birds (cf. 'Field,' Aug. 26th, 1905). When I was in Romsdal I found the inhabitants thought this head-money well worth earning. Prof. Collett has memorialised the Storthing at Christiania in favour of the Common Buzzard, the Rough-legged Buzzard, and the Snow-Owl, but, I am afraid to the present, in vain.

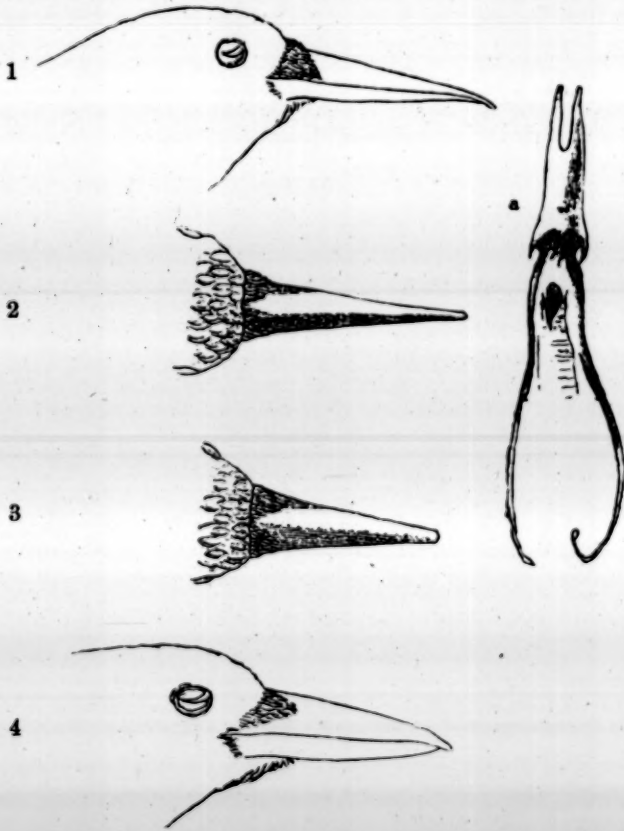
were all that came under my cognizance. Wood-Pigeons have also been scarce, and fortunately so, from a farmer's point of view.

Another scarcely less harmful bird, in spite of all which sentimentalists may say about it, is the House-Sparrow, which is a parasite to man more than any other wild bird which exists. Spasmodic attempts to keep it down have lately been made in Norfolk by the formation of Sparrow clubs—to wit, a combination of farmers, who undertake to destroy them by netting and taking their nests. The parish in which I reside and nine others adjoining thus combined, and paid for the twelve months ending Nov. 30th premiums on 11,438 Sparrows and 4772 nestlings and eggs, but even these measures are only partially effective. The Sparrow is too firmly rooted in all the cultivatable parts of England to be turned out, but the idea that migrants come to us over the North Sea is untenable.

As a set-off to the destructiveness of the Sparrow and the Wood-Pigeon—and, I am afraid, we must add the Rook—the ornithologist can point to the benefits conferred on man by the Barn-Owl, or White Owl, as it is termed, of which a striking instance will be mentioned presently. The Owl is one of the seven birds which receive throughout the administrative county of Norfolk a so-called protection by order of our County Council during the whole of the year, but if the word "Owl" is to be understood in a generic sense, I fear the law here is little better than a dead letter. There is one engine of destruction, the pole-trap, which used to kill all comers—Owls, Hawks, Cuckoos, Woodpeckers, &c.—but this, having become illegal in 1904, is much less used than formerly, although there are still several gamekeepers who employ it, being unaware that they are thereby rendering themselves liable to a fine of forty shillings.

The Migration of Nutcrackers.—With regard to the Nutcrackers, the migration was far from being confined to England; in fact, we only received the fringe of what was a very widespread movement, reaching all over Germany and into France. If they all belonged to the Siberian race they must have come a long distance. In addition to the two Norfolk examples, one was taken in Suffolk, one in Bucks, and one in Sussex. All these are considered to have been the slender-billed *Nucifraga macro-rhynchus*. The 'Revue Française d'Ornithologie' records a good

many "Casse-noix," but does not say whether they were thick- or thin-billed; in some examples the distinction is not very apparent. Swiss examples are, however, stated by M. Ghidimi, of Geneva, to have been *N. c. macrorhynchus* (T. C. 1912, p. 247). Here it may not be out of place to reproduce Mr. E. de Selys Longchamps' outlines of the beaks of the two races ('Bulletin de l'Académie de Bruxelles,' 1844, p. 298). It may also be well



1 and 2, *Nucifraga c. macrorhynchus*; 3 and 4, *N. c. caryocatactes*.

to give his drawing of the Nutcracker's bifurcated tongue, which has been alluded to by the Rev. J. G. Tuck and Mr. Ground (*ante*, pp. 34, 74). Possibly its bifurcation assists the bird in extracting the seeds from fir-cones; yet the Crossbill has no such help. Immediately beneath the tongue there opens a dilatable sac or pouch, which is well described by M. de Sinéty in the 'Proceedings' of the French "Académie des Sciences" (1853, p. 785). M. Sinéty also draws attention to the very

expandable nature of the oesophagus, remarking that he has taken as many as seven hazel-nuts from the pouch, and six more from the oesophagus of a single Nutcracker. When the pouch is thus charged, he goes on to say, it will hang down, "comme une énorme goître sous le cou," its size sometimes attaining to double that of the bird's head.

Principal Norfolk Rarities.—The chief rarities for the year 1911 were a Serin-Finch in January (a curious date!), a pair of White-winged Terns in May, a Red-footed Falcon in June, an Icterine Warbler in September, a Sabine's Gull and two Nutcrackers in October, as well as a third in Suffolk, and one, if not two, Black-throated Divers in December. The occurrence of another Serin-Finch in midwinter (Jan. 28th) is especially noteworthy, for this is a bird which, when it does come to England, one would look for in the spring or autumn rather than in the winter. Norfolk was visited by a Serin-Finch in January, 1887, and by a Citril-Finch in January, 1904, also by a Red-breasted Flycatcher in December, 1896, and by a Water Pipit in January, 1905. It is probable that all these birds were of eastern rather than of southern origin, but even admitting that to be the case, their presence at such a time of the year is very remarkable, and can only be accounted for by their being blown out of their course by wind.

Another species which, when it does occur in the eastern counties is generally met with about midwinter, is the Little Bustard, and Mr. Howard Saunders states that it is chiefly a winter visitor to Germany also ('Manual of British Birds,' p. 526). Again, several Nyroca Ducks have been taken in winter, and in 1909 Mr. Dye recorded a Glossy Ibis in Norfolk in December,* and in 1903 I referred to an Avocet on Dec. 31st.† All these are southern birds whose winter range is in Africa, and they are out of place in England in December and January, and it cannot be supposed that they come to us voluntarily.

Rainfall, as registered by Mr. Edward Knight, 25·18°. Wind, prevailing direction, W. Gales on fifteen days.

JANUARY.

1st.—There is not much recorded in my journal for January. A couple of Waxwings sent to Mr. Lowne were the only ones

* Zool. 1910, p. 74.

† Zool. 1904, p. 215.

announced. A single Little Auk was sent to Mr. Roberts; this was perhaps a returning bird from the passage noted two months previously, fortunate enough to have escaped death from starvation.

2nd.—On the 2nd Mr. Gerard Gurney put up the ubiquitous Green Sandpiper, to which no season of the year seems to come amiss, and on the 6th a Norfolk Plover, much behindhand, was seen near the coast by the Rev. M. C. Bird, the same belated bird being observed again on the 20th by the keeper.

14th.—On the 14th a Knot was shot at Hellesdon, nearly twenty miles from the sea; evidently it had followed the river, and may have come with a party of waders which were heard by Mr. B. B. Riviere the same night passing over the lighted city of Norwich. On the 21st Mr. F. H. Barclay flushed a Bittern on Hoveton Broad, where rare birds are protected; and on the 25th Mr. Pinchin identified two Mealy Redpolls near the sea.

28th.—The end of the month produced the first novelty, one of the Yarmouth birdcatchers bringing Mr. Lowne a cock Serin-Finch, which he had caught on the North Denes, a very favourite haunt of the bird-netting fraternity. This is the fifth, if not the sixth, Serin-Finch which has been netted at Yarmouth, and I believe they have all been cocks; yet at Blakeney none have been taken, but there is no netting there. We do not know what governs the separation of the sexes in the *Fringillidæ*, well exemplified in the Chaffinch and Brambling, but which ceases at the end of February.

FEBRUARY.

No notes.

MARCH.

1st.—During most of February I was watching birds in the Pyrenees, and have no more notes until the beginning of March, when a Sea-Eagle, said to have weighed sixteen pounds—which is hardly credible—was shot on a sporting estate at Downham, and forthwith went the round of the papers as a Golden Eagle!

3rd.—Three Snipe's eggs found by the keeper (M. C. Bird); very early.

25th.—Some Redstarts, which were probably Black Redstarts, seen at Yarmouth by Mr. A. Patterson, and about the same time several were reported from Lowestoft by Mr. C. B. Ticehurst. The Black Redstart is either commoner, or more observed than

formerly, but it is only met with upon the coast. In May, 1885, it was described in 'The Zoologist' as a very rare Norfolk bird, but no one could say that of it now; its migratory line of flight appears to be especially between Caistor and Southwold in Suffolk. During fifteen years I never met with it at Cromer, and regard the example said to have been seen near there on May 15th, 1872, as doubtful. Mr. Patterson also saw a Wheatear in Yarmouth Park, and the following day Mr. B. B. Riviere saw two Wheatears at Croxton, which is near Thetford. If these Wheatears had just come from the south, which I do not think likely, they must have been moving in the teeth of a north-easterly gale, which was registered at Yarmouth as force 8. That would be a very high wind, and if it prevailed on the Continent would be sufficient to blow them from Southern Russia, whence so many other involuntary migrants are supposed to come to England.

31st.—Complaints of the damage done to the pear-tree buds at Neatishead by Blue Tits (M. Bird), but a gentleman who shot thirty-eight of them must remember that they eat a great many *larvæ* as well. In the opinion of the late Prof. Newton, Titmice were to be regarded as benefactors to the horticulturist rather than the contrary.

APRIL.

10th.—*Barn-Owls' Nests and their Contents.*—The Barn-Owl is a quaint and useful bird, and, happily for agriculturists, it is generally distributed, so that there are few parishes of any extent in Norfolk where its weird shriek cannot be heard. A measure of protection is accorded to them, yet their numbers hardly seem to increase, which certainly is not for lack of field-mice, of which we have plenty. As far as my experience goes in this county, the idea that they sometimes eat the young of tame pigeons in dove-cots, though still prevalent, is absolutely without foundation. To-day, although the wind was not high, a large pollard oak near my house blew down, which I regretted the more because it had long been a haunt of the Barn-Owl. As was to be expected, there were plenty of pellets in the cavity of its trunk, some of which were so dried that they may have been cast up twelve months or more. With some assistance I collected 114, and had them soaked in water. The result was the skulls,

or portions of skulls, of 19 young rats, 126 long- and short-tailed field-mice, 69 shrew-mice, and three small birds, apparently greenfinches—a pretty good testimony this to the utility of the Barn-Owl! I have never seen a full-sized rat in a Barn-Owl's nest; generally they are about a quarter grown or less, and I can hardly believe they would tackle a large one. About June 9th Mr. Q. E. Gurney found the remains of two moles in a Barn-Owl's nest, and this I regard as most unusual food, but it was in the same parish where a mole was found before (Zool. 1910, p. 136)—a parish where these little burrowers are very plentiful. On revisiting the nest with my nephew on the 19th two Barn-Owls flew out, but there were no more moles, only some mice-pellets and one egg. On July 3rd there were five eggs, and on the 15th six. On the 27th three of them were hatched, and on Aug. 4th the other two were hatched.

17th.—A Tawny Owl's nest† with young in a pigeon-locker at Intwood, and about the same time another nest, also with young, was seen by Mr. B. B. Riviere at Colton. In the same locker a pair of Jackdaws were nesting, but the tame Pigeons had apparently forsaken it, perhaps from suspicions of such predatory neighbours. The Tawny Owl is apt to be very aggressive when it has young, and it is dangerous to approach the nest without a stick.

MAY.

1st.—A Cuckoo's egg in a Chaffinch's nest at Brunstead (M. C. Bird).

2nd.—A Lesser Redpoll's nest with two eggs at Croxton (B. B. Riviere).

4th.—The Earl of Kimberley reports over thirty Heron's nests on Kimberley Lake. There is one nest at Wheatacre and two still at Earlham, where there was only one last year; from both these places they have been driven by injudicious felling of trees. Four nests at Catfield, and one at Ranworth (M. C. Bird).

8th.—This was really a summer's day, and perfect for birds'-nesting. Accordingly, it was with no small pleasure that Mr. Gerard Gurney and I directed our steps, by invitation, to one of the smaller Broads, where Redshanks and Reed-Buntings were soon seen, but on this occasion no Grasshopper-Warblers, although it is a favourite place for them, and some had been

recently heard. Flitting among the reed-tops were a good many Bearded Tits, which the absence of wind had tempted up from their recesses. Although the "Reed Pheasant" no longer suffers from the rapacity of dealers, the gradual growing up of our Broads must more and more limit its area of distribution. A Coot's nest was presently found, containing two eggs and four newly-hatched young ones, whose orange heads were quite resplendent among the reeds. These active mites speedily slipped over the sides of the nest, but one bolder than the rest crept into its fabric, evidently thinking that between the blades of bolder-rush its brilliantly coloured head would be concealed, and it was less conspicuous than might have been expected. In six weeks these young Coots would be white-breasted Coots. Further on Mr. R. Gurney punted us to a Great Crested Grebe's nest, and again the scarlet countenance of a very young Grebe was seen eyeing us from between the blades of the bolder. About 1 p.m. the "boom" of a Bittern was distinctly audible, and again at 1.20 the strange sound swept over the water, not loud this time, but rising in volume like some distant fog-horn. Naumann expresses it on paper by the syllables "ii-prumb," repeated slowly, which perhaps is as near to it as any imitation can be. It seemed very similar to the "booming" of the Little Bittern which I heard at Saham Mere in 1894.

9th.—A Teal sitting upon eight eggs at Hempstead, where there have been the unusual number of four nests this year. In 1835 above a thousand were taken there in a decoy (Norw. Nat. Trans. ii. p. 21), which has long ceased working, although the pool remains. Perhaps, however, Skelton, the old decoyman, reckoned every Duck which was smaller than a Mallard as a Teal.

10th.—The Bittern which we had heard on the 8th, reported by Mr. R. Gurney to be "booming" rather freely on his brother's marshes, or rather among the reed-beds, and generally in the afternoon. It continued to be heard by the broadman until the end of May, after which there was a period of several weeks' silence. The "booming" is evidently to be regarded as a spring call, and when sitting the Bittern would naturally cease to make it.

11th.—Three Black Terns upon Breydon Broad (G. Jary), and on the 16th eighteen more, and a pair of White-winged

Terns on another Broad. Also a pair of Black-necked Grebes (M. C. Bird).

23rd.—W., 3. A Spoonbill seen by Mr. T. A. Coward on Easton Broad, Suffolk, and on the 25th the same or another on Breydon Broad, where it remained until the 31st (G. Jary). This was the first one reported in 1911.

30th.—Examined, with Mr. C. B. Ticehurst, a number of seeds of the common laurel, which had been driven into the crevices of the bark of oak-trees by Nuthatches at Keswick, and which puzzled us considerably, but were eventually identified by the gardener.

31st.—To-day Mr. N. Tracey was shown a nest of the Common Curlew in a fen which lies a few miles from Lynn. The broken remains of three eggs were lying in the nest, which a game-keeper subsequently explained to Mr. Tracey by saying that he had come upon a fox apparently engaged in sucking them.

JUNE.

1st.—About this date a Red-footed Falcon, as I am informed by Mr. Saunders, was brought into Yarmouth, but I did not learn in what parish the shooting of it was perpetrated, or into whose possession the bird passed. This was not known as a British bird until 1830, when no fewer than five were killed in Norfolk, and others have been taken since; the last two occurred in April, 1901, and June, 1908. It is even possible that it may have bred in the county.

6th.—N., 2. A Spoonbill in Kimberley Park (the Earl of Kimberley), and a few days later it was to be seen on Breydon Broad.

7th.—Two Pigmy Curlews seen at Cley (C. Borrer).

22nd.—S.W., 4. Two more Spoonbills on Breydon Broad, which stayed until the 27th (Jary).

29th.—A Woodcock's nest with three eggs at Croxton (B. Riviere).

JULY.

8th.—*Nesting of the Bittern.*—After an arduous search in a dense reed-bed, higher than a man's head, a well-feathered young Bittern was found by Miss E. L. Turner and J. Vincent, which it was naturally concluded could not be the only one, as

the Bittern lays four eggs. It refused to take food when placed in its mouth, whence Miss Turner judged that the young are fed by regurgitation, and the only sound it uttered was "a curious bubbling note." As the young of the Bittern are not hatched



YOUNG BITTERN. (By Miss Turner, Norfolk, July 7th, 1911.)

simultaneously it is possible that this was the youngest bird of the clutch. The illustration of a young Bittern taken at Ranworth long ago (Gurney and Fisher, Zool. 1846, p. 1321) will hardly bear comparison with Miss Turner's beautiful photographs, one of which I am permitted to reproduce. The discovery of the nest fell to the Rev. M. C. Bird eleven days later.

From Mr. Robert Gurney, who was with him, I learn that when found it was full of Bittern's feathers, with a few fish-scales, probably those of Rudd and Roach. This nest, which I had an opportunity of examining afterwards, viz. on Aug. 1st, was, according to my tape measurements, 18×15 in. at the water's edge, with a depth in the centre of about 4.7 in.; roughly speaking, it was an ovate circle. It rested on no solid foundation, there being about 18 in. of water below it, in which I felt about in the hope of finding a rotten egg. The fabric is well shown in a photograph by Miss Turner, who thought that its flatness was probably owing to its having been trampled down by the nestlings. But even in this condition it hardly deserved the epithet of a careless structure, which has been applied to it by some writers. The nest was situated among the stems of the reeds, and could only be approached by wading. It was principally composed of broken stalks of the bulrush, here called "bolder-reed" (*Scirpus lacustris*), by vast tracts of which it was surrounded.

The young Bitterns kept about, and on the 27th two were seen by Mr. Robert Gurney, but not together. This was within half a mile of the nest, and the old bird could be plainly heard croaking to them. That they eventually got off unmolested there is every reason to believe, and I think a general desire was shown to protect them.

15th.—An Avocet on Breydon Broad, but it only stayed two days (G. Jary).

16th.—Two young Grey Crows at Siderstrand about this date (Sir S. Hoare). Last week one was seen near Thetford (Davey).

AUGUST.

21st.—*The Food of Starlings.* — Three Starlings shot at Keswick and submitted for microscopic dissection to Mr. John Hamond were found to contain Noctuid larvæ, Weevils, Carabid beetles, and a few elderberries. On Sept. 5th four more, killed at the same place, were sent to the School of Agriculture, and the following report on their stomachs was drawn up by Mr. Hamond, which may be compared with the report on those killed in April, 1910 (Zool. 1911, p. 173):—

SEX.	INJURIES.		BENEFITS.		NEUTRAL.
	Farmer's Crops.	Insects, &c.	Weeds.	Insects, &c.	
♀	1 piece of oat-husk	11 Carabid beetles, 4 Staphylinid beetles	1 seed of <i>Rumex crispus</i> , 1 seed of (?)	3 Noctuid larvæ, 9 Weevils (2 <i>Otiorrhynchus</i> , 6 <i>Sitones</i>)	2 spiders, 1 Lamellicorn beetle (which?), 63 seeds of elder
♀	—	1 Carabid beetle	—	4 Noctuid larvæ, 25 ants, 1 Halticid beetle, 2 Weevils (1 <i>Sitones</i> , 1 <i>Otiorrhynchus</i>), 7 small gastropods (<i>Helix</i>)	About 45 whole elderberries & 88 seeds
♀	—	1 Carabid beetle	—	1 Earwig, 2 Weevils (1 <i>Otiorrhynchus</i>), 2 small gastropods (1 <i>Helix</i> , 1 <i>Pupidon</i> ?)	About 50 whole elderberries & 214 seeds
♂	—	1 Carabid beetle, 2 Staphylinid beetles	—	1 Noctuid larva, 8 Weevils (2 <i>Otiorrhynchus</i> , 6 <i>Sitones</i>), 1 gastropod (<i>Helix</i>)	1 elderberry & 59 seeds

Mr. F. J. Mann, of Shropham, considers that Starlings cause him a loss of three "comb" per acre on every acre of wheat. When the wheat is up they get down to the young roots with their strong beaks, and so destroy all further germination. Whether they are seeking wireworms, or whether they are after grain, the result is the same to the wheat, which shrivels up and perishes.

25th.—Mr. E. Saunders informs me of a young Pintail Duck on Breydon Broad—a very early arrival, if not one escaped from captivity.

30th.—At the end of this month Mr. Catley saw a bevy of young Quails in a wheat-field at Cley. But very few breed in Norfolk or Suffolk now, nor is it possible that they can be anything but rare when a single ship lands 76,000 at Liverpool, all caught at the beginning of the pairing season in Egypt ('Field,' March 2th, 1912).

SEPTEMBER.

13th.—Pomatorhine Skua at Cley (C. Borrer), the only one reported this year; it was following some Sandwich Terns, and was not shot. As usual, there were a good many Richardson's Skuas on this part of the coast, where they are enticed by the Terns.

15th.—Red-necked Phalarope at Yarmouth (F. Chasen).

23rd. — Mr. N. Tracey saw a Grey Phalarope at North Wootton, where it remained a fortnight, dividing its time between two ponds at some distance from one another. It was very tame, but was unfortunately eventually caught in a trap which had not been intended for it.

30th.—A severe gale from the north-west, which in the evening attained almost to a hurricane (force 9 at Yarmouth, force 10 at Spurn Head), was extraordinarily destructive to the tops of oak-trees, which it snapped off, owing, it was supposed, to brittleness after the prolonged drought, but the Rev. M. C. H. Bird attributed it to the enormous crop of acorns.

OCTOBER.

1st.—The next day a Gannet came ashore alive at Lowestoft (C. B. Ticehurst), and Mr. Ramm identified three Little Gulls at Blakeney, as well as some Grey Phalaropes which had been carried out of their course by the violence of the wind. A Fork-tailed Petrel was brought to Mr. Pashley, and an Arctic Skua was picked up in the Naval Asylum grounds at Yarmouth (A. Patterson).

3rd.—N.W., 2. To-day Mr. Bird reports the unusual number of seven Land-Rails on Ruston Common; probably this also was the effect of the gale. Another Gannet, a young male,† was picked up at Horsey (E. Saunders), and the next day another found dying in Lowestoft Harbour (C. B. Ticehurst). They certainly are commoner in Norfolk than they used to be. On the 16th I saw a young one dead on Cromer Lighthouse hills, but it had been defunct a long time. About Sept. 11th Mr. F. Richards saw a nice lot at sea.

6th.—The night of Oct. 5th was again boisterous, a strong gale blowing from the north-east, which at seven o'clock next morning was only three points less in its velocity than that of

the week before (Sept. 30th). Coming as it did at the height of the migratory season, and from the north-east, it was to be expected that it would have an immediate effect upon birds, with the movements of which wind is an all-important factor, as Norfolk naturalists know well. Accordingly, the following day the head-woodman at Hempstead, near Holt, informed me that he had seen a bird answering to the description of a Nutcracker. This it proved to be. The unfortunate bird† lived to get as far as Cawston, where there is a large fir-wood, where one, presumably the same individual, was shot that afternoon. On the same day, and only about two miles from where the Nutcracker was first seen, a Hoopoe turned up.

9th.—N.N.E., 4. Another Nutcracker† shot at Sparham, within five miles of where the other was shot, and it is not unlikely that they came over together on the night of the 5th, with a third which was shot in Buckinghamshire, as recorded. From what I have seen of them in Switzerland, I should judge the Nutcracker to be a bird of feeble flight, not well adapted for crossing seas, and without a wind behind them these would hardly have got over the North Sea. On looking back through 'The Zoologist,' I do not find that a Nutcracker has been accorded a place in these Norfolk Notes since 1907, and the last before that was a doubtful occurrence in May, 1899.

12th.—About three hundred Rooks seen at daybreak by Mr. F. N. Chasen arriving at Yarmouth, cawing loudly as they dropped on the sand-dunes. Many Rooks were to be seen during this month busy on the recently drilled wheat-fields, in spite of all efforts to keep them off. It is to be presumed that they are not long in finding out which farmers have, and which have not, dressed their grain with "corvusine." Rooks no doubt do a certain amount of good, that no one will deny, but Mr. Walter Collinge, in his recent Report to the Council of the Land Agents' Society (1910), lays a verdict of heavy damages against them. In eight hundred and thirty dissections made by himself and Mr. T. Thring, the percentage of grain was 67·5, and if to this be added roots and fruit, it was 71 per cent. In Henry VIII.'s time Rooks were kept in check by Act of Parliament.

13th.—A flock of eleven Norfolk Plover† in a field of swede-turnips at Hempstead, where the gamekeeper had noticed them

for some weeks ; also the largest congregation of Starlings on one of the reed-ponds that I think I ever saw.

17th.—Greater Spotted Woodpecker† at Hoveton. A marked arrival of Goldcrests at Yarmouth (B. Dye), and four Brent Geese at Cley (Pinchin).

18th.—Mr. Arthur Patterson found among the rejectamenta of the sea some birds at high-tide mark at Caistor—a Wood-Pigeon, a Chaffinch, and a Robin—and the next day, continuing his walk along the shore, some Starlings and Thrushes. During the two preceding days the wind had been registered at Yarmouth as due east and very high. Probably we little know how many migratory birds succumb to the violence of these autumnal gales. A Rook, afraid to venture any further until compelled by hunger, remained, Mr. Patterson was informed, for three days on the 'Argus' steamship.

23rd.—Mr. Dye was informed that a Great Grey Shrike was seen to-day on Gorleston Pier.

28th.—N.N.E., 4. A young Sabine's Gull identified a little below Blakeney Harbour by Mr. C. Borrer. A few days before one was shot at Humber-mouth (Caton-Haigh).

31st.—A young Marsh-Harrier† shot at Croxton whilst feeding on a dead hare.

NOVEMBER.

1st.—Mr. Pinchin saw a Merlin and a Peregrine.

10th.—Two Barn-Owls hawking over the marshes at 4.25 p.m. (Bird).

11th.—Nutcracker shot near Bury, in Suffolk ; it had been seen for a week or more (J. G. Tuck), and may perhaps have come over with the other three in October.

17th.—A somewhat unusual incident happened on the Sheringham golf-links to-day, a ball played by a gentleman who is well known as a golfer being twice picked up and then dropped again by a Rook. The sabie bird must have been a recent and hungry arrival, which mistook it for something edible.*

24th.—Mr. Dye received a Little Gull, shot on the south beach, Yarmouth.

29th.—Two Storm Petrels taken off Lowestoft. One of these

* I have heard of a Gannet picking up a golf-ball in the sea, but that was not to eat it.

birds was kept alive for ten days by Mr. Ticehurst, who is of opinion that the food is found entirely by the sense of smell ('Avicultural Magazine,' p. 112).

VARIETIES OF PLUMAGE.

At the beginning of January a Wren,† nearly three parts white, but with wings normal, was found dead at Boyland, and has since been presented to the Museum by Colonel Irby. In February a white Chaffinch occurred at Blofield, and a pied Corn-Bunting† near Stalham (E. Gunn). In May a pied Robin at Belton (A. Patterson).

Sept. 27th.—*Perdix montana*, Briss. It is always in the same district that this red phase of the Partridge is met with. Having been unconsciously introduced into Norfolk from the Continent some sixteen years ago, as is supposed, the strain continues to crop up from time to time, in spite of not being spared by shooters. To-day one of these red birds† was killed at Bylaugh, and forwarded to Mr. T. E. Gunn. Another was seen in the spring at Cranmer, paired with a Partridge of the ordinary colour, where, Mr. Hamond was informed, they bred, and that the young were normal.

Oct. 12th.—A Blackbird† with a handsome white back at Northrepps, in the same lane where I remember a pied one on Sept. 28th, 1908; if it was the same bird it had grown a good deal whiter in thirty-five months.

28th.—One of the so-called Sabine's Snipes, now known to be only a melanism, was shot out of a field of turnips at Beeston, near Cromer, by Dr. W. Sumpter, and was ascertained to be a male by Mr. Pashley.

Nov. 25th.—A nearly white Redwing† shot at Framingham (Roberts); last autumn, it will be remembered, three varieties of this species were recorded.

HYBRID SWAN × GOOSE.

On July 26th, through the courtesy of its owner, Mrs. N. E. Reynolds, I had an opportunity of examining the hybrid Mute Swan, of which I contributed an illustration last year (Zool. 1911, p. 161), and which a great many people have since been to see, as it is thought a great curiosity. The beak and legs of

this singular cross-bred Swan are orange-yellow, and the feet large, a point noticed by the farm-servant when she assisted in liberating it from the egg. But the most striking feature about the bird is its long, thick neck, which, with the head and tail, are now almost white, the back and body only remaining blotched with slate-colour. The call of this hybrid is said to be fairly distinct from that of its parents, but I did not hear it. It generally lives by itself on a pond at Beeston, sometimes flying half a mile or so and returning. The Swan, which is its father, strongly objects to having it on the same piece of water, and this jealousy is thought by Mrs. Reynolds to mean that her hybrid is a male.

THE BIRDS OF THAT PORTION OF THE NORTH-EAST COAST BETWEEN TYNEMOUTH AND SEATON SLUICE, NORTHUMBERLAND.

By J. M. CHARLTON.

(Continued from p. 28.)

RINGED PLOVER (*Ægialitis hiaticola*).—Formerly numerous, but now an uncommon visitor, generally in winter. I have seen as many as eight gun-barrels emptied at one of these birds at St. Mary's, but it only fled all the swifter. I have not come across any examples of the rarer, smaller form of this species, which is a spring visitor to England.

GOLDEN PLOVER (*Charadrius pluvialis*).—Flocks of these birds are not uncommon during some winters, when they frequent the arable land in company with companies of Lapwings.

GREY PLOVER (*Squatarola helvetica*).—A fairly regular autumn visitant on migration. Mr. C. M. Adamson mentions the following as being in his collection:—A male of the year was shot on Whitley Sands on Sept. 16th, 1839, from a small flock. Another at Hartley, Sept. 14th, 1846. On Aug. 20th, 1862, a female in summer plumage was shot at Hartley on its southern migration. An immature male was shot near Seaton Sluice on Oct. 12th, 1895. Since then there have been quite a number of other occurrences. In his Catalogue J. Hancock mentions that the third example was the only bird in the summer plumage of which he had record for Northumberland and Durham.

LAPWING (*Vanellus vulgaris*).—A common resident. Large numbers arrive in the autumn from the Continent, when huge flocks haunt the fields, and I have occasionally seen them arriving in April.

TURNSTONE (*Streptilas interpres*).—Formerly a regular visitant in spring and autumn while on migration, but now observed infrequently. The first actual records I know of were the

occurrences of several in the breeding plumage near Tynemouth during the summers of 1829 and 1830.

OYSTERCATCHER (*Hamatopus ostralegus*).—Regularly seen in early autumn when the birds which have bred further north pass south for the colder months. Mr. W. G. Monks informs me that while he was on St. Mary's lighthouse one of these birds killed itself by flying against the glazing.

AVOCET (*Recurvirostra avocetta*).—The only specimen recorded for Northumberland was procured at Hartley. This is mentioned in Selby's Catalogue as being "killed not long ago," and "in the possession of Mr. Wardle." Selby's Catalogue appeared in 1831, but how are we to judge as to the date of this occurrence when we have only the scanty information "not long ago." It might be anywhere within the limit of a hundred years! In the autumn of 1907 a fisherman of Bates' Island informed Mr. Leonard Gill, Curator of the Newcastle Museum, of a bird which aptly suits the description of this species that had been observed by him in the vicinity of the island.

GREY PHALAROPE (*Phalaropus fulicarius*).—A very rare autumn visitant. On Nov. 22nd, 1838, one was shot on the coast. Mr. R. Duncan informs me that one was shot at the island in about 1856, and one two years later. The last record I have is of one which was shot on Whitley Sands in 1906, and was set up by Mr. Wright for Mr. Watts, of Whitley Bay.

RED-NECKED PHALAROPE (*P. hyperboreus*).—A very rare casual visitant. Three have been shot here: one on August 16th, 1832, in the first plumage, at Tynemouth; another at Cullercoats, on Nov. 22nd, 1838, in the same garb; and the last at St. Mary's Island in December, 1872. The first two are in the Hancock Museum, while the third is mentioned in Mr. C. M. Adamson's 'Scraps about Birds,' and was in his collection.

WOODCOCK (*Scolopax rusticula*).—Only seen on migration in October, and then they arrive in fair numbers on the coast at night, and are often so exhausted that they can be taken by hand. In some years large numbers are seen, but in others very few. In 1907 many were procured, several on the lighthouse, one in our front garden. One flew into an open window, being attracted by the light in the room, and was caught. A specimen was shot, so Mackenzie says ('History of Northumber-

land'), in December, 1863, which had a valuable diamond in its stomach. This species has been killed by flying against the lighthouse at St. Mary's Island, as many as five having been procured in a single night.

COMMON SNIPE (*Gallinago caelestis*).— Sometimes seen near the coast; generally in Briar Dene in spring when the foreign bred birds, which have spent the winter with us, arrive on the coast preparatory to leaving us. Formerly the large numbers of migrants arriving from the north in October remained to rest for a day or so before passing inland, but now, of course, they are too much disturbed. I am indebted to Mr. W. Douglas, of Cullercoats, for the following note concerning this species, and I can vouch for the truth of his statement. During August of 1903 he had some homer-pigeons which he was desirous of trying, so he took them about six miles away from his house and freed one. After circling round once or twice the bird shot off in the direction of home. Near where the pigeon had been released was a small marsh, and from this he saw a small bird rise up and fly after the pigeon. On arriving at his house about two hours later, he looked into his pigeon-cote and found the bird he had released there, and sitting just outside on the roof was a Snipe! On his attempting to reach it, it flew away, and he did not see it again. It is very singular that a Snipe, one of the most retiring of birds, should approach right into the midst of the dwellings of men. Perhaps it was on its way to the coast, and having no companion of its own species, it thought it would follow another bird which appeared to be in the same condition as itself.

JACK SNIPE (*G. gallinula*).—An autumn and winter visitant of irregular occurrence. I know of about twelve or fifteen occurrences.

AMERICAN PECTORAL SANDPIPER (*Tringa maculata*).—Whitley Sands claim a specimen of this bird as the only one of the species recorded for Northumberland. On June 27th, 1853, Mr. Robert Duncan shot a bird, which, after considerable examination, was identified as belonging to this species. Mr. Duncan and his father first noticed it as they were walking along the shore to the island; it flew up in front, and they at once saw it was something out of the ordinary. His father

fired several shots at it, and each time it flew a little further on or back along the shore. At last it perched on a mass of seaweed at the mouth of Briar Dene Burn, and Mr. Duncan, Junior, walked up and shot it as it flew away. It was purchased from him by Mr. C. M. Adamson, who perceived it was a bird he did not know, and after much discussion it proved to be an American Pectoral Sandpiper. (H. Saunders, Man. Brit. Birds; J. Hancock, Cat. Birds Northd. and Durham.)

DUNLIN (*T. alpina*).—Now an occasional winter visitor, but formerly more numerous, like most of the birds here. Birds of this species have been killed by flying against the lantern of the lighthouse on St. Mary's Island. J. Hancock records the first, in September, 1830, a male in the first plumage, which is set up in the Hancock Collection.

LITTLE STINT (*T. minuta*).—A rare autumn visitor, generally seen in September. On Sept. 12th, 1843, Mr. C. M. Adamson shot three out of a flock of six on Whitley Sands, and another the same day and place out of a flock of Dunlins. One of these specimens is in the Hancock Museum.

CURLEW-SANDPIPER (*T. subarquata*).—A very rare autumn visitant. The late John Hancock procured two on Whitley Sands in September, 1849; both were immature birds. Another example was shot at St. Mary's Island on Sept. 1st, 1896; it is also an immature, and is now in the Hancock Collection.

PURPLE SANDPIPER (*T. striata*).—A fairly common visitant in winter, and the most numerous of the wading birds to be found on this part of the coast, the nature of the shore being most suited to it, *i. e.* the seaweed-covered rocks and sand. J. Hancock gives the first record, two immature birds shot on Sept. 9th, 1830—in the Hancock Museum. The same naturalist mentions two examples which were shot at St. Mary's Island on May 18th, and had attained the summer plumage. Mr. R. Duncan also informs me that he once shot a bird of this species in summer plumage in the same month.

KNOT (*T. canutus*).—A regular early spring and autumn visitant. The first specimen recorded is in the Hancock Museum, and was shot on Whitley Sands in 1836. Mr. C. M. Adamson says the following with regard to this species:—"A female in the summer plumage was shot on its return from the breeding-

grounds on July 19th, 1854, at Hartley Bates; it was a single bird and is the earliest I have known killed. I well remember picking it up. I thought at the time it was a lovely bird. It was beautifully marked, with much of the rich pink colour still left on the breast, and it had such a glossy appearance, mixed with purple reflections. It was flying along the coast, coming over my head when I was sitting amongst rocks on a reach of land running out into the sea." Mr. R. Duncan informs me that the day after this he himself shot another specimen, also in summer plumage, but a male.

SANDERLING (*Calidris arenaria*).—An occasional winter visitant, decidedly uncommon.

RUFF (*Machetes pugnax*).—Formerly of regular occurrence, chiefly immature birds, now totally absent.

COMMON SANDPIPER (*Totanus hypoleucus*).—As a spring and autumn migrant this bird is occasionally seen, generally in Briar Dene. It is within the range of possibility that in former years this species bred in Briar Dene among the masses of bracken, which still abound. The first recorded specimen is in the Hancock Museum, in the first plumage, shot on Whitley Sands in 1830.

REDSHANK (*T. calidris*).—Formerly a common bird in winter on the shore, but now only irregularly seen.

SPOTTED REDSHANK (*T. fuscus*).—A very rare autumn visitant. The only record I have is of one obtained in the first plumage on August 26th, 1831, at St. Mary's Island.

GREENSHANK (*T. canescens*).—A rare autumn visitant. I have three records of it. One was shot on Sept. 12th, 1843, in the first plumage, on Whitley Sands by Mr. C. M. Adamson, who mentions it in his 'Scraps about Birds.' Another was shot by Mr. R. Duncan on August 31st, 1861, in the first plumage, at St. Mary's Island; and the last specimen obtained was shot at St. Mary's Island in 1907.

BAR-TAILED GODWIT (*Limosa lapponica*).—A rare autumn and winter visitant, of which there are only two records. One was shot at St. Mary's Island on August 30th, 1837, and another, in first plumage, on Whitley Sands in October, 1840. The former was a male in the red summer plumage, and had not commenced to moult. Mr. C. M. Adamson says it was the only red bird he had seen shot in Northumberland in autumn.

COMMON CURLEW (*Numerius arquata*).—Occasionally seen in winter but never common, as there are no mud-flats about. In spring flocks are sometimes heard passing over at night, and then occasionally on an exceptionally starlit night one may utter its spring love trill.

WHIMBREL (*N. phæopus*).—An annual spring visitant on migration. Mr. C. M. Adamson relates the following on this species in his 'Scraps about Birds':—"On August 26th, 1851, I got a mature Whimbrel at Bates' Island. It was moulting on its back, and the new feathers were coming, spotted with reddish brown like the plumage of the younger bird but darker. It apparently had been partially moulting for some time, as it had many feathers similar to those coming. The remainder of the plumage which had not been renewed was very much worn and faded. This bird showed that it had commenced to moult during summer, and that the early feathers changed had come in what might be supposed to have been its summer plumage, that is, supposing the species had a summer plumage. Now I remember having seen many Whimbrels in spring, but I cannot call to my recollection ever having seen one with what might be called any change to summer plumage on the back; all the back, so far as I remember, showing only the worn feathers acquired at the autumnal moult the previous year, and without change of colour except by wear, the breasts being more or less spotted with grey only. Probably if such an occurrence ever happened as a moult of the back feathers in spring in this species they would come with rich-coloured spots as in this bird, which had begun to moult during its summer condition. I think, however, that by the time this bird had finished its autumnal moult these rich-coloured spotted feathers would have altered in appearance and would have formed a portion of the bird's regular plainer plumage of winter. Why does the Whimbrel not get a decided summer plumage"?

ROSEATE TERN (*Sterna dougalli*).—In his 'Scraps about Birds' Mr. Adamson mentions two specimens in his collection—a mature in summer plumage, and a young one in first plumage. "They were shot at Hartley Island as they flew together, the old one accompanying the young and attending to it (August 6th, 1846). The young bird's quills were not fully grown, showing

how early these birds leave their breeding-grounds and depart to more southern climes, the nearest breeding-place being the Farne Islands, perhaps forty miles north." Mr. J. Wright informs me that one was shot near Whitley in about the year 1902.

SANDWICH TERN (*Sterna cantiaca*).—A very occasional visitor in spring and autumn. I only have two records—one shot at St. Mary's, August 26th, 1866, by Mr. R. Duncan; the other a mature female shot at St. Mary's on Sept. 6th, 1895, and now in the collection of H. Coxon, Esq.

COMMON TERN (*S. fluviatilis*).—A regular and fairly common spring and autumn visitant on migration, especially at the beginning of August, when numbers are to be seen fishing close to the shore.

ARCTIC TERN (*S. macrura*).—Very occasionally single individuals are seen fishing off the coast during early autumn, being visitors from the Farne Islands where this species breeds. A male was shot at St. Mary's Island on Oct. 2nd, 1895, and is now in the Hancock collection.

LITTLE TERN (*S. minuta*).—An uncommon visitor on migration. Mr. R. Duncan informed me of an immature specimen shot on St. Mary's Isle, August 16th, 1873. The only other record I have is of one shot in September, 1892, by my father off the coast, which was also an immature bird.

(To be continued.)

THE LARGE LARCH SAWFLY (*NEMATUS ERICHSONI*).

By ERIC B. DUNLOP.

THE Large Larch Sawfly belongs to the family *Tenthredinidæ* of the order Hymenoptera. In Europe it is found in the north and central portion of the continent, and in North America from Central Michigan to Labrador.

MacDougall describes the female* as follows:—"She measures up to $\frac{3}{8}$ in., or a little over, in length, and in spread of wings just less than an inch. The ground colour is black. The head and thorax are black; the first joint of the abdomen is black; then follow joints coloured red; the end of the abdomen again being black. The mouth parts, the two front pairs of legs, except at the part next to the thorax, and the upper parts of the femora of the hind legs, are reddish or reddish-yellow. The tibiæ are yellowish or pale in the upper parts. The antennæ are nine-jointed and somewhat thick, and taper towards the apex. With a lens the head and thorax are seen to be sparsely and finely pubescent, and the thorax is markedly punctured. The wings are glassy and are slightly clouded below the stigma."

The male is very scarce; out of three hundred pupæ Prof. Hewitt secured only two. The following differences in the sexes are noted by him†:—"The male is smaller than the female. The terminal portion of the abdomen is broadly rounded. The legs are paler in colour than those of the female, and only a small portion of the distal extremities of the tibiæ of the third pair of legs is dark coloured."

The egg is white in colour, and measures just over a millimetre in length. The full-grown caterpillar measures three-quarters of an inch, or a little over, in length. It has a round, black, hairy head, with a single ocellus on each side. On the upper surface, all down the back, the colour is grey-green; the sides are lighter; the under surface is yellowish-green. If a lens is used, there will be seen, on the abdominal segments, transverse rows of minute warts with

* The 'Journal' of the Board of Agriculture, October, 1906, p. 889.

† *Ibid.*, December, 1908, p. 650.

spines. The spiracles along each side are brown. The legs number twenty. There are three pairs of thoracic legs (true legs), which are black, and seven pairs of abdominal legs (pro-legs), which have the colour of the under side of the body. The head is followed by twelve segments—1, 2, and 3 are thoracic segments, and each bears a pair of legs; 4 to 12 inclusive are abdominal joints; 4 has no legs; 5, 6, 7, 8, 9, and 10 have each a pair of pro-legs; 11 has no legs; and 12, the last joint, carries a pair of pro-legs. Before the first moult the head and thoracic legs are green. Hewitt states that there are five ecdyses and therefore six larval stages. The larvæ hatch out in eight to ten days after the eggs have been deposited. The larval life lasts from three to four weeks. The cocoon measures less than half an inch in length. It is brown in colour and cylindrical in shape, with rounded ends. The caterpillars spend the winter in the cocoon, and pupate about three weeks before their appearance as the imago.

The flies are very erratic in their appearance, the earliest being seen at the beginning of May, and they have also been recorded as late as the end of July. It has been suggested that there are two broods, but this is certainly not the case. The females, which reproduce parthenogenetically (without the intervention of the male), deposit their eggs, soon after emergence, in the shoots of the year, these offering less resistance to the ovipositor than the older growth. Usually the eggs are laid in two parallel rows, the eggs of one row alternating with those of the other. Occasionally they are laid in a single row. From twenty to forty are deposited.

Prof. Peck* has an interesting paragraph on the saw of these flies; it is as follows:—"This instrument is a very curious object; in order to describe it, it will be proper to compare it with the ordinary tenon saw used by cabinet-makers, which, being made of a very thin plate of steel, requires a back to prevent its bending. The back is a piece of iron in which a narrow and deep groove is cut to receive the plate which is fixed. The saw of the *Tenthredo* is also furnished with a back, but the groove is in the plate, and receives a prominent ridge of the back, which is not fixed, but permits the saw to slide forward or backward as it is thrown out or retracted. The saw of artificers

* Quoted in 'British Insects' by E. F. Staveland, p. 162.

is single, but the saw of the *Tenthredo* is double, and consists of two distinct saws with their backs. The insect, in using them, first throws out one, and, whilst it is returning, pushes forward the other; and this alternate motion is continued until the incision is effected, when the two saws, receding from each other, conduct the egg between them into its place. In the artificial saw the teeth are alternately bent towards the sides, so that the fissure or 'skerf' may be made sufficiently wide for the blade to pass easily. To answer this purpose in some measure in the *Tenthredo* the teeth are a little twisted, so as to stand obliquely with respect to the right line, and their points of course project a little beyond the place of the blade without being laterally bent; all those in each blade thus project a little outwards. But the 'skerf' is more easily procured and a free range effected by small teeth placed on the outer side of each saw, so that whilst the vertical effect is that of a saw, the lateral effect is that of a rasp. The teeth point inwards towards the 'handle' and their outer edge is beset by smaller teeth which point outward. . . . Now it is well known that all wounds caused by a rough or blunt tool are more difficult to heal than those which are clean cut. This holds good in the vegetable as well as in the animal kingdom, and it is here, probably, that the final cause of the complicated structure of this beautiful little instrument may be sought. It is not desirable that the wound should heal. The fissure in which the egg is inserted is not a mere resting-place, but is designed to afford nourishment to the eggs, which, absorbing the juices of the plant, actually grow, between the time of their exclusion and their hatching. A supply of nourishment is thus produced and maintained by the stoppage of circulation consequent on the opening of this wound, which, in some cases is further irritated, at the time of oviposition, by the introduction of a drop of poisonous fluid, which in some cases results in the formation of an excrescence or 'gall.' "

Owing to the irregular emergence of the adults, larvæ of all sizes may be found on the same tree at one time. They are to be found in a normal year up to the end of August, but in the past summer (1911) I could not find any remaining on the trees three weeks prior to this, the brilliant weather with which we

were favoured having undoubtedly aided the development of the larvæ. The eggs are usually deposited in the terminal shoots of the lower lateral branches; the larvæ do not, as a rule, devour the fresh green growth of the year, but commence to eat the foliage on the growth of the previous year, feeding their way towards the axis of the tree; very exceptionally I have known the new foliage of the year devoured. When in the younger stages the larvæ feed in clusters, but as they grow older this trait is not so marked, no doubt because each caterpillar requires more food. On being disturbed, a characteristic position assumed by them is obtained by holding on to the branch with the thoracic legs and elevating the abdominal portion until the posterior part of it is over the head. When full-fed they drop from the branches, and usually spin their cocoons under the leaves and grass beneath the tree, not entering the soil. I have found them in another situation, *i.e.*, under large stones, down the sides of which the larvæ had evidently crept. From under one stone, about a foot square, I have taken as many as twenty-five cocoons.

Nematus erichsoni, the appearance and habits of which have just been described, was not known to occur with any frequency in this country previous to the commencement of the present century. In the last few years, however, it has been found to be present in such alarming numbers, in various districts, that the Board of Agriculture and Fisheries has placed this sawfly among the dangerous insects scheduled under the Destructive Insects and Pests Order, the presence of which on any plantation must be at once reported to the Board. Every occupier, on whose land the insect is found, is bound to report the discovery under a penalty of £10.

That the matter is serious is obvious from the following quotation:—"During several extensive outbreaks [of *N. erichsoni*] since 1880 it has killed from 50-100 per cent. of the mature larch over vast areas in the North-eastern United States and South-eastern Canada. It is evident that the amount of merchantable-sized timber that has died as the result of defoliation by this insect will aggregate many billions of feet."*

* U. S. Department of Agriculture. Bureau of Entomology. Bulletin No. 58, p. 60.

Though in recent years attacks by this insect have been recorded in England, Scotland, and Wales, it is perhaps in the English Lake District that the most serious damage has resulted. Some account of the attack there and the methods resorted to in order to combat it will now be given. It has been stated that harm was done in the district by this insect in 1868, but the identification was not reliable. The present attack was first observed in 1904, more seriously in 1905, and in 1906 the caterpillars were satisfactorily identified as being those of the Large Larch Sawfly. Apparently the centre from which the pest spread was the Dodd Wood, which is about four miles from Keswick, in the Bassenthwaite direction. Thousands of trees are stated to have died there; they varied in age from twenty to seventy years. In the past two years I have found the insect present in widely spread localities in Cumberland and Westmorland—in fact, wherever I have searched for it this *Nematus* has been found present. The strength of the attack varies greatly in different portions of the area. As might be expected, pure larch-woods suffer more severely than those in which other kinds of trees are mixed with the larch. Trees which have been attacked by the Large Larch Sawfly may be recognized by their terminal shoots being withered and brown, and curled towards one side (that on which the sawfly has deposited her ova). This withering is practically invariable, but I have met with a case in which some very vigorous English and Japanese larches showed no sign of it, though the shoots had all suffered from the attacks of the sawfly. These trees were about seven years old, and better specimens I have not seen; no doubt their exceptional vigour enabled them to withstand the attack more successfully than is normally the case.

When the attack is really severe the tree is defoliated, all the green growth, with the exception of the shoots of the year, being devoured by the caterpillars. The larches then present practically the same appearance that they do in mid-winter, and woods attacked as severely as this have a brown appearance, which is easily recognisable at a distance of several miles. In August these trees put forth a fresh flush of foliage, and present the appearance more usually associated with spring. In the

past remarkably fine autumn I noted defoliated larch-twigs actually sprouting again as late as Oct. 7th.

The repeated defoliation of the trees is certain to do them great harm, even if death itself does not result. This is a most serious matter, for in Lakeland many thousands of acres are devoted to the cultivation of the larch.

Unfortunately, for the most part, little has been done in the way of attempts to keep this sawfly within bounds. A few land-owners have had the larvæ wiped off their young trees by hand, and as for some part of their lives the caterpillars feed in clusters, this is not such an impossible task as it might appear to be. This method, of course, is only of value in the case of young trees. During the period of rest, scraping up the litter beneath the trees and mixing it with hot lime has been tried, but found far too expensive.

The Manchester Corporation, on their property at Thirlmere, have, however, used vigorous methods to mitigate the attack, and it is pleasant to be able to state that a great amount of success has attended their efforts. One method tried was to fell the crop on a plantation, and burn the branches on the ground during the last week in May, in the hope of destroying the emerging sawflies. This was not a success. In the case of young trees, crushing with the gloved hand is employed as elsewhere, but where large trees are concerned (between 6 ft. and 20 ft.) spraying is resorted to. This is very effectual, and where the stock is pure larch the cost has been found by the forester at Thirlmere to average about 6s. 1d. per acre. The operation is carried out with knapsack-sprayers and a solution of arsenite of copper. The arsenite of copper is mixed with an equal quantity of wheaten flour, and made up into half-ounce packets; one packet is sufficient for four gallons of water, the capacity of the knapsack-sprayers in use there. The reason for the addition of the flour is to make the solution more adhesive. One application is stated to be sufficient for a season.

The larvæ, when about three-quarters grown, are easily dislodged from the trees, and after showers of rain or strong wind they may be found on the ground in great numbers. Subsequently they climb up the trunks of the trees to the foliage again. This having been noted at Thirlmere, suggested another

means of reducing the numbers of larvæ on trees too tall to be sprayed. A draw-knife is used to smoothe the rough bark on a belt about 15 in. wide round the trunk of the tree at about breast-height. Archangel or Stockholm tar, slightly heated, is applied to the surface. The tarring requires repeating about once a fortnight whilst the attack lasts, in order to keep a moist surface. Bands of straw covered with tar are also fastened round the trees. By either method the larvæ perish on the prepared surface in their attempt to reach the higher portion of the tree. Small trees can be shaken by hand before being tarred; the larvæ, if they have got past the earlier stages, will then drop off like rain. Shaking has no effect on the smaller larvæ. Trees too large to be shaken by hand are jarred by striking them with a wooden mallet provided with a piece of felt or sack-ing on the striking face, in order to prevent damage to the bark. Jarring should be repeated at least once a week. Unfortunately a great number of caterpillars never fall to the ground, and are therefore unaffected by the tar-banding.

Though much good may be done by these methods, it appears to me that the means which holds out the best prospect of permanently reducing the numbers of *N. erichsoni* is by way of encouraging the natural enemies of the pest. Fortunately there is an ichneumon which is parasitic on the larvæ of the Large Larch Sawfly; this is *Mesoleius aulicus*. It has been proposed by the Board of Agriculture to breed out cocoons from woods where these ichneumons have been observed, with a view to determining the percentage of larvæ parasitised, and if a satisfactory result is obtained, to distribute numbers of the cocoons among woods where the attack is just beginning. By hatching the cocoons under a net the sawfly can be retained and killed, and the parasites allowed to go. It is hoped that in this way the parasites will obtain a much wider distribution than by natural means, and that the spread of the sawfly will be checked and its attacks minimised. It is noteworthy that the number of pupæ affected with the ichneumon at Thirlmere rose from 15 per cent. in 1909 to about 62 per cent. in 1910. Some collected for and examined by Hewitt in the spring of 1911 only showed 18 per cent. parasitised. Others from near Crummock Water had as few as 6 per cent. parasitised.

Hewitt states that two specimens of the larva of a species of Diptera have been obtained from the larvæ of *N. erichsoni*. As no mature insects of this parasite were obtained, it is extremely difficult, on account of our scanty knowledge of the larvæ of Diptera, to identify even the genus. He believes, however, that they are *Tachinidæ*, belonging to the subfamily *Sarcophaginæ*. They appeared to be mature, and measured 10 mm. in length. A parasitic fungus (*Cordiceps*) also plays a part in reducing this *Nematus*.

At Thirlmere the Manchester Corporation has adopted various means to encourage birds to frequent their woods. I visited one of their plantings in May, 1908, and saw only a small number of Golden-crested Wrens and Tits, other birds being conspicuous by their absence. This was not altogether surprising, for birds are not particularly partial to larch-woods, much preferring hard-woods, *i.e.* oak, ash, and similar trees. To encourage the birds to remain in their plantations throughout the winter, coconuts and bones have been suspended from the trees, more especially for the benefit of the Tits. Covered feeding-trays have also been provided; this is a great improvement on the original method employed here, for the food was scattered on the ground. To keep the birds about the woods during summer nesting-boxes have been put up, for larches do not present suitable facilities for the nesting of Tits and Starlings. The nesting-boxes are made by the estate forest workmen during bad weather, when outdoor work cannot readily be carried on. At first the boxes were made by boring out small logs and covering the ends; subsequently they were made from bark-covered slabs of waste wood from the saw-mill. The latter were much more appreciated by the birds, probably because in the first case the entrance hole was made near the top of the log, and the bird had to drop down to the level of the nest, instead of the hole being on nearly the same level as the nest, which is the case in the boxes made from slabs. The nesting-boxes are attached to the trees at a height of about 16-20 ft.

The boxes were first provided in 1908; in that year 60 boxes were suspended, and of these 19, or 31·6 per cent., were occupied. In 1909 another 114 were added; of the total, 81, or 46·5 per cent., were utilised by the birds. In 1910 a further

105 were placed in the trees, and it was found that the birds had occupied 56 per cent. of them. In 1911, 347 boxes were in position, and 229 of them were tenanted, an increase of 66 per cent. The species which use them most freely are the Tits and Starlings. The boxes are put up in the hard-woods as well as in those of larch, and the former are used more than the latter, but as the woods are only a few moments' flight apart there can be no doubt that the birds brought up in the hard-woods are beneficial to the larches near by. It is certain that the number of birds in the woods has greatly increased as a direct result of providing nesting-boxes for them. I have watched at close quarters the Great Tit and Chaffinch taking the larvæ of *N. erichsoni*. They work their way along a twig, and then, fluttering off, seize a caterpillar, immediately returning to a stouter portion of the branch in order to devour it (the larvæ are frequently at a point of the twig which will not bear the weight of a bird). In an infested planting which I had under close observation in 1910 there were many Tits present so long as the sawfly larvæ were on the trees, but as soon as they had dropped from them to spin up, the Tits left the locality—a significant fact.

On dissecting a number of birds from a larch plantation which had been attacked, I found that the Great Tit was the bird which had fed most freely on the caterpillar. According to my experience this is also the species which is most ready to avail itself of a nesting-box for breeding purposes. There can be no doubt that the smaller Tits also take the larvæ, and I have noted flocks of Rooks and Jackdaws devouring them. Starlings have been seen feeding on the larvæ at Thirlmere; as has been previously noted, this bird takes advantage of the nesting-boxes there. It is therefore certain that the erection of artificial nesting-sites for birds is of considerable value in checking the Large Larch Sawfly; this has evidently been realised, for in the present spring (1912) several private landowners are imitating the Manchester Corporation, and putting up nesting-boxes in their larch plantings. In the Wythop Woods, near Keswick, Jays were said to be of the greatest service in reducing the pest.

Hewitt states that during the winter months, when the larvæ

are enclosed in their tough cocoons, they are safe from the attacks of avian enemies, but in this he is not correct. During the autumn of 1911, in a larch-wood which was frequented by Pheasants, I found that these birds (they received no artificial food) had scratched over all the litter beneath the trees which had been attacked by *Nematus erichsoni* in search of the cocoons of this insect. This bird would certainly be of great value in reducing the sawfly if present in sufficient numbers.

The Short-tailed Field-Vole (*Microtus agrestis*) is also of use, for it extracts the larvæ from their cocoons during the winter months. Prof. Hewitt calculated that at Thirlmere, in the winter of 1907-8, these rodents had destroyed 25 per cent. of the larvæ. I have taken as many as sixty empty cocoons from a few inches of a Vole's run. Any undue increase of the Field-Vole is, however, not desirable, for the damage which this animal can do to vegetation, when present in large numbers, is well known.

NOTES AND QUERIES.

A V E S.

Early Appearance of Chiffchaff in Shropshire.—Between 6 am. and 7 a.m. on March 14th a Chiffchaff was in good song close to my house. I hear from Mr. H. E. Forrest, our authority for this county, that several other early records have also come to hand. This is practically a fortnight earlier than usual for Salop, and nearly a month sooner than in last year, and for comparison I give personal records of the earliest appearance of this species in this same district in former years:—1903, March 25th; 1904, April 8th (absent from home since April 2nd); 1905, March 23rd; 1906, April 1st; 1907, March 28th; 1908, April 1st; 1909, April 2nd; 1910, March 21st; 1911, April 10th (exceptionally late date, but the first record for Salop generally); 1912, March 14th. It would be of great interest to know if the species has appeared exceptionally early in other counties generally, or the area covered by this early stream of migration.—J. STEELE ELLIOTT (Dowles Manor, Shropshire).

The Little Auk in Essex.—On Feb. 8th I saw a Little Auk, apparently asleep, floating with the tide in one of the channels near Foulness Island, on the Essex coast. On approaching me it turned and swam towards the further bank, and I watched it picking something from the edge of the mud. It did not dive, but once it stood up in the water, and allowed me to notice that the collar on the lower neck was tolerably distinct. In the dead birds that I have examined this feature is variable, but in the whitest young bird (recognized by its small bill and dull black upper parts) I found that the feathers of the lower neck had grey bases, although these were not showing through. A party of Dunlins were feeding on the mud, and as the Auk swam near them they ran away from it in apparent fear, and kept a yard or so away. It is to be hoped that sufficient data are forthcoming to allow us to know the exact cause of these remarkable invasions.—FREDK. J. STUBBS.

A Correction.—I desire as shortly as possible to refer to Mr. Warren's quotations (*ante*, p. 109) from our 'Faunal Series.' He singles out the Orkney volume to refer to. Our remarks in that volume (1891) relate almost entirely to the Erne (Sea-Eagle, or White-tailed Eagle), and not to, as is misleadingly stated, "Eagles" generally! That statement is *extremely* misleading to all readers who do not possess our complete series; quoted as a general statement what almost entirely refers to the rarer of our British Eagles. All our notes which *do* refer to *Golden Eagles* in it treat of at most *two pairs* of nesting birds of this species, and these confined to Hoy, if, indeed, the whole evidence can be accepted to account for more than *one pair at any time*! But if the other volumes be consulted and compared a different aspect will be found exhibited, where Golden Eagles have always been—and still are (of course)—far more abundant than Sea-Eagles. To quote from one *insular* volume without comparing with *ten others*, I repeat, is utterly misleading, and doubly so even where the previous writer's "*compression of facts into two pages of text*" cannot always be accepted as *minutely correct*. We cast no reflection here, however, except to say that the nesting eyries of the Golden Eagle are *not*, as is quoted (*ante*, p. 110), "confined to the highlands and islands of the western coast," and I do not think that they have ever been so, within my recollection!—J. A. HARVIE-BROWN.

INSECTA.

Cocoons of Gyrinus.—In Mr. Gordon Dalglish's interesting notes on the Whirligig Beetle he says (*ante*, p. 71) that the pupa of

Gyrinus has been seldom found, and I therefore wish to state that on July 17th, 1880, when fishing in the Exeter Canal with my friend the late Rev. John Hellins, the well-known lepidopterist, he pointed out to me numerous cocoons of this beetle attached to the stems of rushes, leaves of flags (*Iris*), and sedges. He informed me that he had succeeded in rearing from these cocoons a hymenopterous parasite which he thought was new to science, and that he had forwarded specimens to some eminent authority in London. If I remember rightly, he published a note on the subject in the 'Entomologist's Monthly Magazine.'—W. S. M. D'URBAN (Newport House, Countess Wear, near Exeter).

The Sense of Fear in Insects.—Prompted by Mr. Dalglish's interesting notes on *Gyrinus* (*ante*, p. 64), I would like to add an observation of my own that I find in one of my note-books. I had a specimen of *Pelobius tardus*, a water-beetle well known for its power of producing sounds, and dropped it into an aquarium containing a two-inch Perch. This savage little fish at once darted at the beetle, mouthed, and attempted to swallow it; five or six times, in perhaps as many seconds, the struggling insect disappeared in the mouth of its enemy, and each time it managed to kick itself out—or perhaps it was ejected by the fish with a view to getting a better hold. Finally it took refuge under a stone, where the Perch could not follow it. Now, the most curious feature of the struggle was the succession of eloquent screams that came from the beetle; they were, of course, quite as audible as they would have been from an insect held in the hand, and, although minute, the cries appeared to have exactly the same significance as those of a rat when cornered by a terrier. Yet a little thought suggests that an insect like *Pelobius* has really no use for a sense of fear. The rasp-produced sounds, intensified by the violent efforts of escape, and only by the purest coincidence giving the human observer the impression that the insect was under the empire of an emotion exactly like fear, had not the slightest effect on the fish. I noted this particularly at the time.—FREDK. J. STUBBS.

NOTICES OF NEW BOOKS.

Distribution and Origin of Life in America. By ROBERT FRANCIS SCHARFF, Ph.D., B.Sc. Constable & Co., Ltd.

THIS book is a valuable possession to the student of zoogeography, not necessarily for the acceptance of all the author's theories on the subject, but as a digest of most of the best work on distribution to date. He refers to those whose views on the subject are not supportive of his own—his and Mr. Lydekker's appear seldom to coincide—while naturally a large number of writers are quoted whose conclusions are more in unison with those he has formed, the result being that the volume is a guide to the work of others on the same subject.

Dr. Scharff is a strong advocate of former zoological bridges in the postulate of long-since submerged continental connections, many of which propositions have already received the support and dissent of many prominent zoologists; some almost necessary conclusions can only be understood on these hypotheses, while others appear to scarcely require their insistence when other means of dispersion are considered. Although the systematist has more frequently worked outside the subject, his work has a very important bearing upon it. Species which some of the older writers quoted as examples of wide dispersal have been since recognized as including several distinct species, thus very considerably modifying more than one conclusion once generally accepted. The same difficulty applies to the present recognition of genera, a previously considered very distinct and widely dispersed species often appearing now as a genus comprising several distinct though closely allied species. That this must prove a disturbing element in all considerations of faunal and floral distribution is obvious.

No reader, whether he accept the whole thesis of Dr. Scharff or otherwise, can carefully peruse this volume with disadvantage,

while the bibliography, which certainly does not include everything, is a very acceptable compilation.

Evolution in the Past. By HENRY R. KNIPE, F.L.S. Herbert & Daniel.

THIS volume constitutes a more or less popular introduction to palæontology, and designed by an "endeavour to trace the steps by which life, once initiated on earth, attained its present development." Commencing with the nebular hypothesis, a real start is made with the Palæozoic Age and the beginning of the Cambrian Period. The fauna and flora of each age and period is enumerated with care and so far as fossil records will allow, while a great feature of the work is the number of beautiful plates drawn by Miss Alice B. Woodward, more or less conjectural of the appearance of organic life in those eras. We say conjectural; the frontispiece and the plates depicting *Homo mousteriensis* and *Pithecanthropus* being our justification for that term. The book supplies a want, if the text is studied with discrimination by those readers to whom the subject is not too familiar, while it must be remembered that the lovely illustrations are not *photographed* from nature in bygone days. The book is speculative but necessarily so, and the information is exceedingly well garnered from most of the best and reliable sources.

MISS BATE reports in the 'Geological Magazine' for January last (p. 4) that she has discovered a new fossil Mouse in Crete, which she has named *Mus catreus*. It was evidently of large size. The find occurred in a cave deposit near Sphinari in West Crete, and consists of a right mandibular ramus embedded in a matrix.

The evidence has been strengthened by the discovery of an innominate bone some distance from the first find.

From dental measurements as well as from the position of the iliac crest it is shown that *Mus catreus* is allied to *Cricetomys*.

W. R. F.

